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WOLF, BLOCK, SCHORR & SOLIS-COHEN LLP
250 PARK AVENUE
NEW YORK, NY 10177

EXAMINER

NGUYEN, LUONG TRUNG

ART UNIT

PAPER NUMBER

2612

DATE MAILED: 06/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/806,252

Applicant(s)

IDDAN ET AL.

Examiner

LUONG T. NGUYEN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 and 41 is/are pending in the application.
- 4a) Of the above claim(s) 7-22, 28-39 and 41 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 27 is/are rejected.
- 7) ☒ Claim(s) 5, 6 and 23-26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 March 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/27/01; 11/18/02.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Species I, Figures 1A-1D readable on claims 1-6, 23-27 in the reply filed on 1/14/2005 is acknowledged. The traversal is on the ground(s) that claim 1 is a generic claim. This is found persuasive. The examiner agrees that claim 1 is a generic claim.
2. Claims 7-22 and 28-39, 41 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 1/14/2005.

Drawings

3. The drawings are objected to because the following informalities:

In Figure 1A, "address switch 60" should be changed to --address switch 50--.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the

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drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

5. The disclosure is objected to because of the following informalities:

In the specification, page 10, line 33 disclose "Fig. 1", however, there is no drawing of Fig. 1.

On page 11 (line 7) and page 12 (line 12), "input 44" is not shown in Fig. 1A.

On page 5 (line 32), page 6 (lines 18, 19, 24), page 18 (lines 17, 32), page 20 (line 8), "data buss" should be changed to --data bus--.

On page 17 (line 10), "buss 52" should be changed to --bus 51--.

Appropriate correction is required.

Claim Objections

6. Claim 4 is objected to because of the following informalities:

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Claim 4 (lines 1, 2, and 3), "data buss" should be changed to --data bus--.

Claim 4 (line 3), "one amplifiers" should be changed to --one amplifier--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1 and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Yahav et al. (U. S. Patent No. 6,057,909).

Regarding claim 1, Yahav et al. discloses a 3D camera for determining distances to regions in a scene (optical ranging camera 20 or 240 produces a three-dimensional digital image, Column 12, Lines 22-35, Figures 1, 17A) comprising:

a photosurface (detector matrix array 241, Figure 17A, Column 25, Lines 5-15) having plurality of pixels (plurality of detector elements 242, Figure 17A, Column 25, Lines 5-15) each of which comprises a circuit having single light sensitive element that provides a current responsive to light incident thereon and wherein the circuit is controllable to modulate or gate the current (each detector element 242 provides a current in response to light incident thereon, and is controlled by controller 126 and video processor 116, Figure 17A);

a light source (light source 40, Figure 17A, Column 12, Lines 52-60);

a controller that controls the light source to illuminate the scene with gated or modulated light (controller 126 controls light source 40 to illuminate scene 26 and light modulator 44 to modulate the illumination of scene 26, Figure 17A, Column 25, Lines 17-28, Column 12, Line 60- Column 13, Line 7) and wherein the controller gates or modulates current from the light sensitive element of a pixel in the photosurface responsive to the time dependence of the gating or modulation of the light and determines a distance to a region imaged on the pixel responsive to the gated or modulated current (controller 126 controls shutter array 244 so that each shutter element 246 individually modulates the reflected light from scene 26 reaching each detector element 242; different shutter elements 246 may be modulated to open and shut at the same time or different times, thus, each detector element 242 has its own distance window associated therewith depending on the modulation of the corresponding shutter element, Figure 17A, Column 25, Lines 17-28).

Regarding claim 27, Yahav et al. discloses the controller controls the light source to illuminate the scene with a plurality of light pulses (waveform 60, Figure 3, Column 14, Lines 50-67), each having a pulse width (pulse width T, Figure 3), and wherein the controller gates pixels in the photosurface on or off at times coordinated with times at which light pulses of the plurality of light pulses are radiated (controller 126 controls shutter elements 246 to modulate to open and shut at the same time or different time, Column 25, Lines 21-28).

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9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yahav et al. (U. S. Patent No. 6,057,909) in view of Kozlowski et al. (U. S. Patent No. 6,697,111).

Regarding claim 2, Yahav et al. fails to specifically disclose the circuit comprises at least one amplifier, having an input and an output; a feedback capacitor separate from the light sensitive element connected between the input and output of each of the at least one amplifier; and at least one controllable connection through which current flows from the light sensitive element into the input of the at least one amplifier.

However, Kozlowski et al. teaches a pixel circuit, which comprises at least one amplifier, a feedback capacitor, and at least one controllable connection as shown in Figure 1, Column 1, Lines 30-33). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Yahav et al. in order to generate signal with low noise (Column 1, Lines 25-30).

Regarding claim 3, Kozlowski et al. discloses the amplifier is an operational amplifier (Figure 1).

Regarding claim 4, Kozlowski et al. discloses wherein the circuit comprises at least one data bus (a bus is connected to readout switch, Figure 1) and wherein the circuit comprises at

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least one address switch (read out switch, Figure 1) that connects a data bus of the at least one data bus to an output of one of the at least one amplifier, either directly or via another switch.

Allowable Subject Matter

11. Claims 5-6, 23-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 5, the prior art of the record fails to show or fairly suggest a 3D camera wherein the at least one controllable connection comprises at least one gate switch and the controller opens and closes the at least one gate switch to gate the pixel on and off and determines a distance to a region imaged on the pixel responsive to an amount of charge integrated on the feedback capacitor of the at least one amplifier during times at which the pixel is gated on.

Claims 6, 23-24, 25-26 are allowable for the reason given in claim 5.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Anagnostopoulos (U. S. Patent No. 4,490,036) discloses image sensor and rangefinder device having background subtraction with paired analog shift registers.

Nonaka (U. S. Patent No. 5,848,301) discloses camera range finder.

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So et al. (U. S. Patent No. 6,556,244) discloses active pixel sensor with electronic shutter.

Braun et al. (U. S. Patent No. 6,654,556) discloses camera with through-the-lens lighting.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUONG T. NGUYEN whose telephone number is (571) 272-7315. The examiner can normally be reached on 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (571) 272-7308. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN
06/13/05



LUONG T. NGUYEN
PATENT EXAMINER